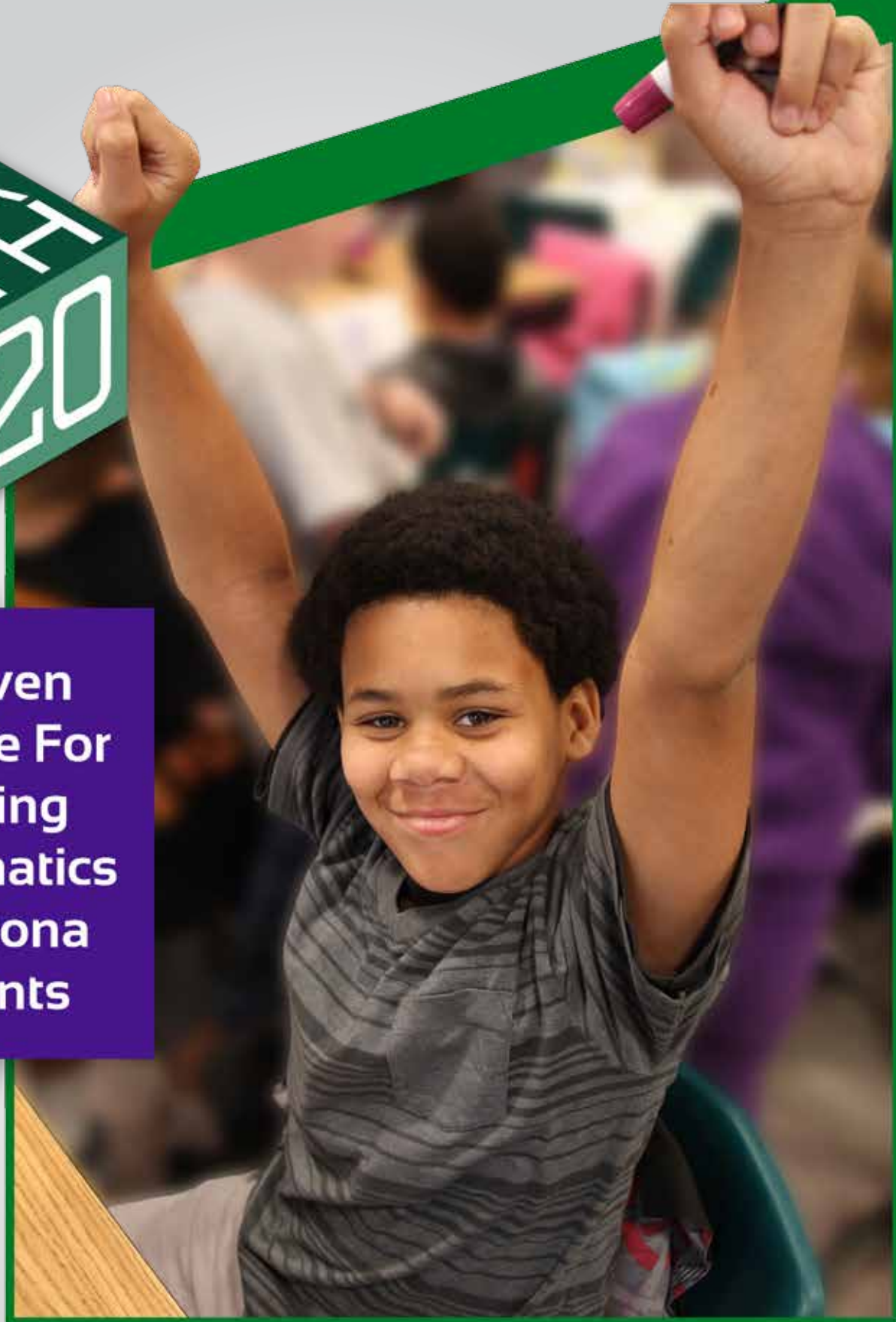




**A Proven
Initiative For
Teaching
Mathematics
To Arizona
Students**



Notes



Math 20/20 engages teachers and school leaders by taking a systemic approach to transforming the teaching and learning of math based on Arizona's College and Career Ready Standards for Mathematics.

The unique combination of grade level specific professional learning for teachers, teacher leaders, and administrators is accompanied by ongoing implementation coaching and student materials to offer school districts the opportunity to embed quality mathematics teaching into the system's culture.

In partnership with the Regional Service Centers, **Math 20/20** seeks to transform the quality of math education throughout Arizona.



The Math 20/20 initiative is based on Arizona's College and Career Ready Standards for Mathematics.

The need

The pressure to improve student performance has never been greater. Teachers need the tools, strategies and support to teach for results.

Math 20/20 provides comprehensive and highly engaging professional development that prepares teachers and leaders to succeed in this endeavor.

Vision: To ensure all Arizona students possess a deep and broad understanding of the mathematics needed for college and careers.

Mission: This is achieved by developing a non-negotiable commitment to quality math teaching and learning among teachers and their leaders.

It all adds up

For success in college and careers, all Arizona students deserve access to opportunities to gain a deep and broad understanding of mathematics at the highest possible levels.

To make mathematics achievement a reality for all students, we must move from “pockets of excellence” to “systemic excellence.”

We propose to do this by simultaneously building the capacity of both teachers and leaders with a focused vision for mathematics. Effective teaching requires teachers to have a deep understanding of the mathematical knowledge they

are expected to teach (Ball, Thames, and Phelps 2008) and a clear view of how student learning of mathematics develops and progresses across grades (Daro, Mosher, and Corcoran 2011; Sztajn et al. 2012).

Our approach

Math 20/20 focuses on grade-level cohorts across a district to thoroughly implement math-specific content and pedagogy for that grade level. It also equips leaders to support teachers in implementing a transformative vision for teaching math.

The key to successful professional development centers on creating system-wide transformation. It's not enough to simply increase teacher knowledge. Attention must also be paid to classroom implementation, school and district climate, and the leadership that supports improved teacher practice. **Math 20/20** will complement and reinforce your district initiatives, instructional resources, and teacher evaluation system.

Math 20/20 Grade Level Courses include:

- Components for all district and school leadership
- 50 hours of professional learning for all teachers and teacher leaders
- 8 hours of professional learning for district and site-based leaders

Implementation Coaching includes:

- Sustainable model that maintains the progress of teachers and teacher leaders
- Classroom coaching for teachers and leaders
- Workshops and seminars for teachers and leaders

A focus on teachers

In the Math 20/20 grade level courses teachers gain in-depth knowledge of math specific content and pedagogy while learning how best to integrate district components with their new learning.



Professional reading

Teachers study John Van de Walle's ***Teaching Student-Centered Mathematics*** to support mathematical content knowledge and application. They gain critical skills needed to notice, analyze, and respond to students' thinking and performance. Beliefs and dispositions that foster continued learning receive focused attention.



Content planning

Teachers engage in activities that directly transfer to classroom practice. This includes grade level discussions focused on integration of newly learned strategies. Teachers engage in using these resources and planning with the "Mining Mat" to identify ways to achieve effective implementation.



Rehearsal

During all sessions, teachers engage in activities focused on standards-based learning, allowing time to anticipate student strategies. Teachers also rehearse the pedagogy that guides student learning and learn how to better analyze student thinking and misconceptions.



Customization

Each district is offered customization options based on their current teacher evaluation instrument and other district-specific resources. Teachers and leaders can then make connections to these resources by focusing on pedagogical elements such as questioning, student engagement, critical thinking, classroom climate, and teacher content knowledge.

Grade level specific professional learning for teachers

During the initial professional learning course, teachers participate in six full-day workshops during the school year that include:

- **Deep examination of grade-level content standards**
- **Integration of the Standards for Mathematical Practice**
- **Discussions and activities that develop specific mathematical content knowledge and related pedagogical implications**
- **Implementation of classroom tasks and analysis of student work**

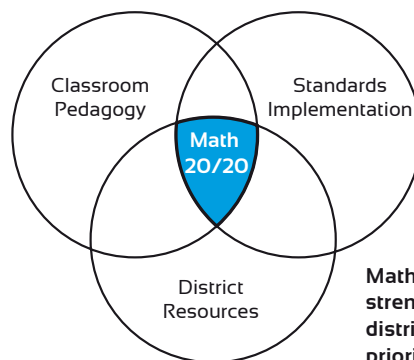
Sample grade level course schedule

SESSION	CONTENT	HOMEWORK & CLASSROOM IMPLEMENTATION
SESSION 1	Standards Overview Operations & Algebraic Thinking (OA)	Implementation of Content
SESSION 2	Place Value (NBT.A) Mathematical Practice 1	Professional Reading
SESSION 3	Whole Number Operations (NBT.B) Mathematical Practices 2-3	Student Tasks
SESSION 4	Fractions (NF) Mathematical Practice 4	Data Collection
SESSION 5	Measurement and Data (MD) Decimal Operations Mathematical Practices 5-6	
SESSION 6	Geometry(G) Mathematical Practices 7-8	

Curriculum & Resources

Math 20/20 incorporates customized features that include the use of district curriculum documents, such as pacing guides and curriculum maps.

It also integrates well with district-adopted math resources and makes connections to teacher evaluation pedagogy.



Math 20/20 will complement, strengthen and reinforce your district's important existing priorities and initiatives.



A focus on leaders

During the initial grade level course, principals and other leaders examine their roles as math leaders. This supports research that states effective learning environments require that principals and other leaders possess the skill necessary to promote and support meaningful mathematics teaching and learning (NCTM, 2012).

Every leader must be equipped with the supervisory skills to ensure their teachers can make quality mathematics accessible to all students.

This requires exposure to and practice with tools that assist leaders to monitor and coach their teachers in standards-based mathematics and give attention to both the content standards and mathematical practices as they pertain to their evaluation system.

The **Math 20/20** leadership support system includes two district-level planning sessions and four administrator professional development sessions.

Two planning sessions

In the two district planning sessions, district leaders and the **Math 20/20** facilitator collaboratively prepare for effective **Math 20/20** learning opportunities for teachers and site leaders.



During Planning Session 1, curriculum leaders will customize teacher sessions to align with district curriculum documents, resources, and support materials.

Planning Session 2, attended by supervisors and curriculum leaders, will focus on customizing principal leadership seminars with district and school strategic plans and previous learning.

Four leader sessions

During the initial grade level courses, **Math 20/20** leadership seminars include a series of four, two-hour sessions that align with the timeframe of the teacher workshops to provide background information and develop the expertise needed to support the transfer and implementation of **Math 20/20** workshop content.



The proficiency of your leaders will increase as they learn how to better:

- develop strategies for monitoring the written, taught, and tested math curriculum in their schools,
- facilitate cross-grade-level discussions of math content and pedagogy,
- provide specific feedback directly related to math pedagogy, and
- implement a school-wide mathematics vision.

Leader session outcomes



Introduce content of Math 20/20 workshops, identify teacher strengths and needs, and connect professional learning to a strategic plan.



Apply leadership skills to the development of focus, coherence, and rigor of mathematics using the Rodel Trajectory Mathematics Standards document.



Apply leadership skills to the implementation of the Standards for Mathematical Practice, focusing on pedagogy to develop authentic student engagement.



Make connections from the Trajectory document for Standards and Standards for Mathematical Practices Walk-through Tool to the teacher evaluation instrument.

Implementation Coaching

Once Math 20/20 has been implemented for both teachers and leaders, a valuable investment has been made. The resulting dividends, which include administrator and teacher proficiency and increased student achievement, can then be multiplied over time.

The **Math 20/20** Implementation Coaching supports teachers' understanding and implementation of the standards-based content and practices covered in the grade level courses.

It also develops principals and other school leaders in their roles as instructional leaders for standards-based mathematics.

Math 20/20 Implementation Coaching includes a number of planning sessions and workshops that will ensure the continued success of your program.

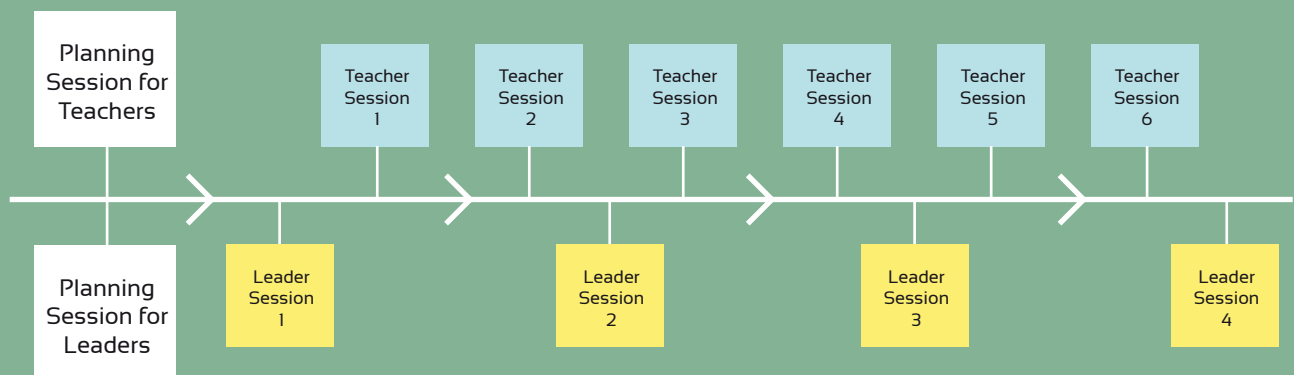
The Math 20/20 Implementation Coaching includes:

District-Level Support

- One 90-minute leadership orientation and planning session
- Two 90-minute leadership seminars
- One 90-minute data talk and planning session
- Access to seven volumes of grade-level specific supplemental student math materials
- Two 2-hour teacher/leader workshops
 - Math content
 - Standards for Mathematical Practice
 - Effective teaching and learning practice
 - Effective leadership practice
 - Next steps in refining chosen focus

Grade Level Course sequence

Leader sessions are scheduled to occur in alignment with the corresponding teacher workshops, making sure that everyone in your organization is on the same page, at the same time.



Site-Level Support

- Designated liaison
- One 90-minute educator orientation and overview of chosen year-long focus
- Two half/full day site-based visits
 - Classroom walk-throughs with data collection on chosen year-long focus
 - Conversations and planning with leaders
 - 45-minute teacher/leader debrief and training in refining chosen year-long focus
- Two half/full day site-based visits
 - Classroom demonstration / grade-level planning
 - Conversations and planning with leaders
 - 45-minute teacher/leader debrief and training in refining chosen year-long focus

During the second and subsequent years of implementation, Math 20/20 Implementation Coaching uses a series of planning sessions and workshops to ensure that the teachers and leaders in your organization continue to grow professionally, and that all previous levels of achievement are continued.

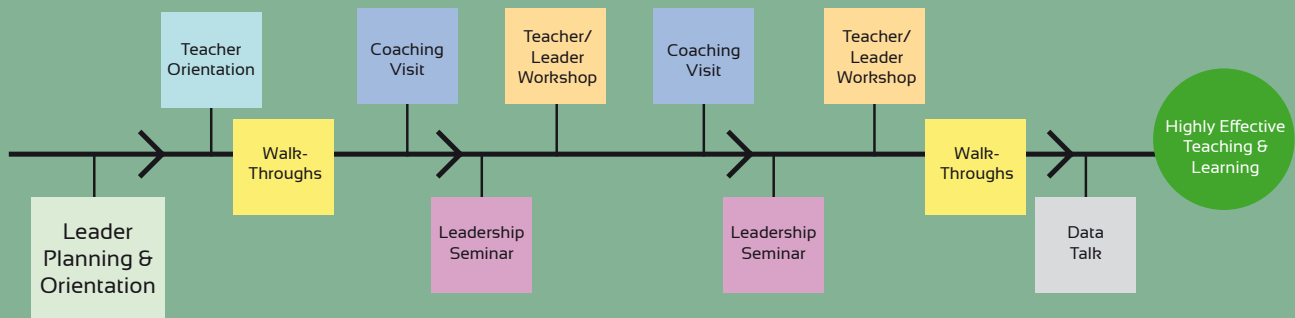


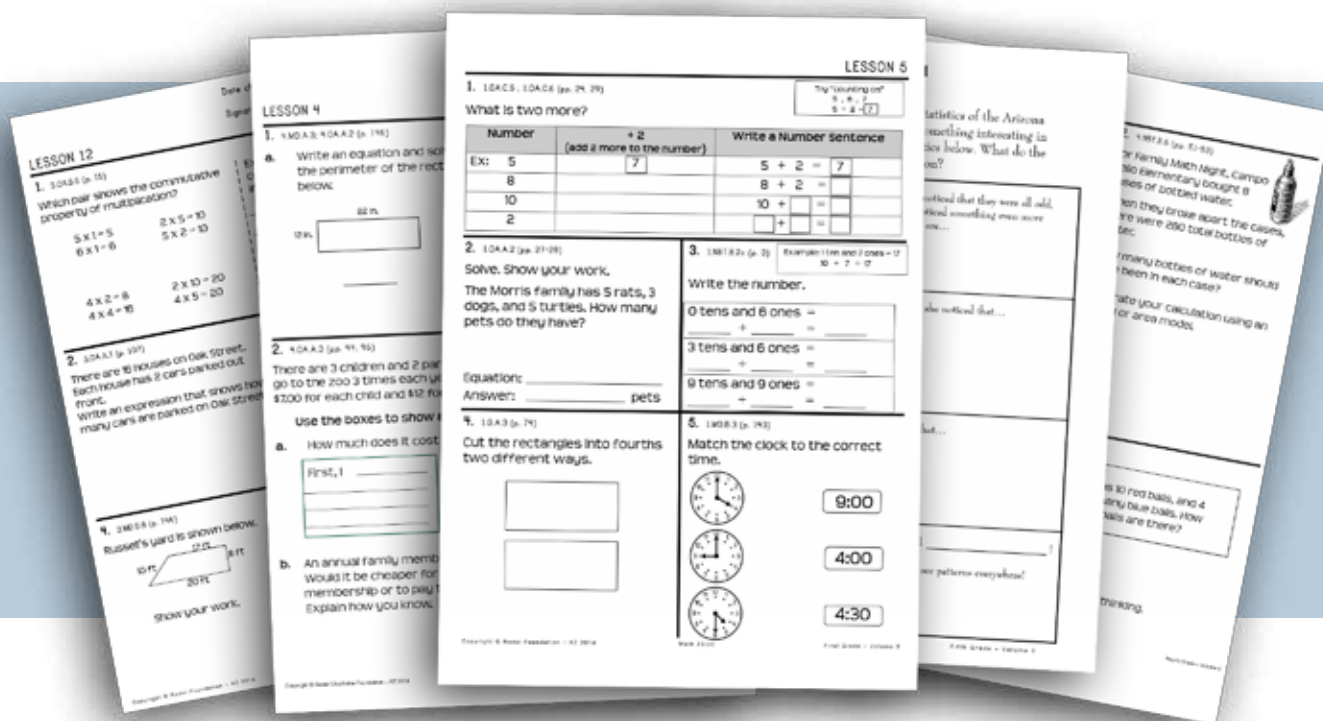
Robyann Musil

Teaching and Learning Director,
Littleton Elementary District

“Being able to participate in the school walk-throughs was a wonderful experience. It gave me firsthand knowledge of the support and professional development our leadership teams receive from the Math 20/20 team. It is now clear what to look for when completing walk-throughs and observations, and has given me background knowledge that I use in my conversations with principals throughout my district.”

Implementation Coaching sequence





Student practice materials

To further support **Math 20/20** professional learning, Rodel has developed student math practice materials that teachers can use to supplement their local adopted instructional resources.

Whether teachers need additional practice items to support classroom instruction, or formative assessment items to assess student learning, the Rodel practice materials can provide helpful instructional resources. Rooted in research, the student math practice materials were developed by experts in mathematics education and seasoned school leaders.

Written for Arizona's Math Standards

- Includes tasks for all of Arizona's math standards with an emphasis on the standards identified as most critical for each grade level
- Codes each task to show the aligned content standard(s), so the booklets can serve as a formative assessment
- Balances level of rigor
- Sequenced to reflect how students progress while learning a topic

Ready for Rigorous Assessments

- Embeds items similar to college-career readiness assessment items to give students practice with assessment-aligned problem formats
- Integrates multiple standards resembling assessment items
- Embeds Standards for Mathematical Practice
- Reflects the full range of rigor
- Includes end-of-year performance expectations beginning in January



Ready for Families

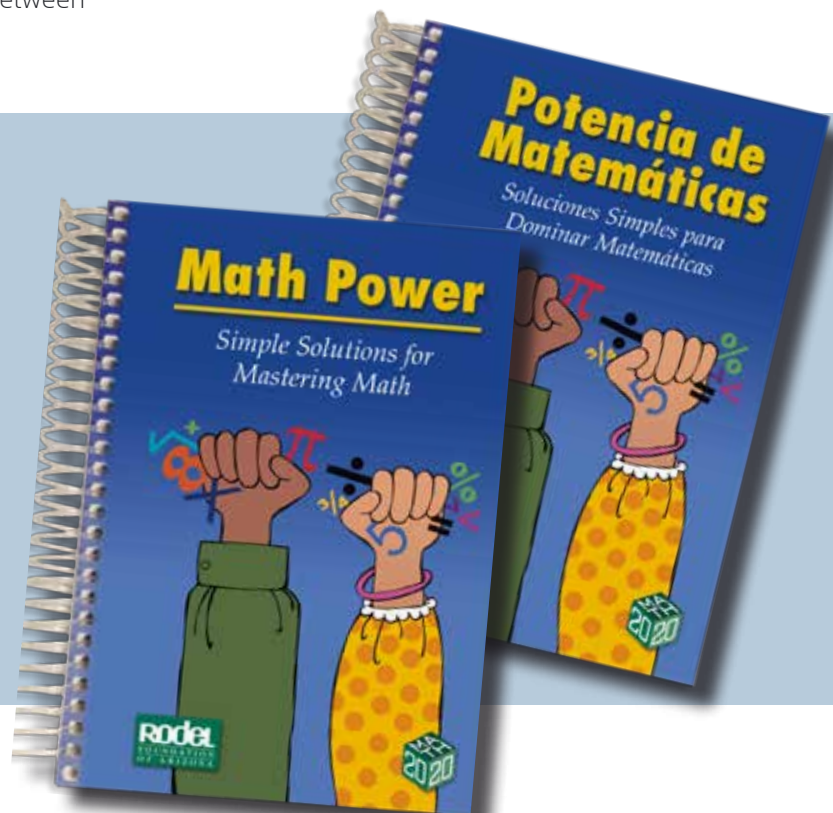
- References helpful pages from the book, **Math Power: Simple Solutions for Mastering Math** for each item
- Provides 10 – 15 minutes of daily math practice
- Includes tips for making the end of book activity a success, with extensions into daily life
- Builds interactions and connections between parent and child

Math Power

An optional resource for Math 20/20 families

The Rodel Foundation of Arizona recently released a powerful resource designed for families to help their children with math homework, **Math Power: Simple Solutions for Mastering Math**. Contact Rodel at (480) 367-2920 for purchasing options.

The student practice materials featured in the Math 20/20 courses and coaching include **Math Power** reference page numbers for all tasks.





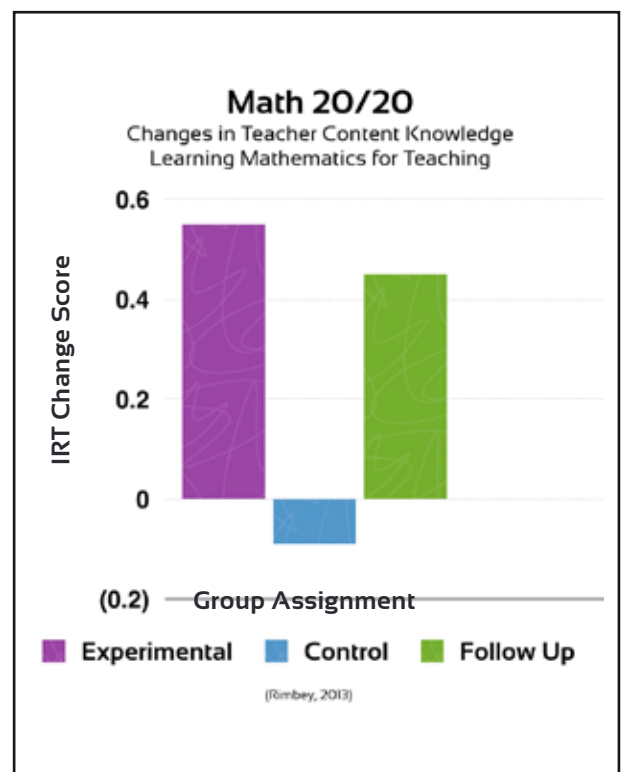
Demonstrated results

In a 2013 Rodel study, **Math 20/20** was shown to have improved both the teachers' content knowledge and classroom mathematical practices.

By way of example, the chart on the right demonstrates the increase in content knowledge between **Math 20/20** experimental and control groups.

2014 Math 20/20 Districts/LEAs

Akimel O'Otham Pee Posh Charter School, Inc.
Fowler Elementary District
Liberty Elementary District
Littleton Elementary District
Madison Elementary District
Mesa Public Schools
Pendergast Elementary District
Queen Creek Unified District
Salt River Pima-Maricopa Community Schools
Tollson Elementary District
Union Elementary District
Wilson Elementary District



Satisfied partners

Based on the latest research, the Math 20/20 Initiative focuses on providing teachers with a deep understanding of the mathematical knowledge they are expected to teach.

To date, Math 20/20 has been implemented in 17 Arizona school systems.



Dr. Joyce Cook

Principal, Red Mountain Ranch
Mesa Public Schools

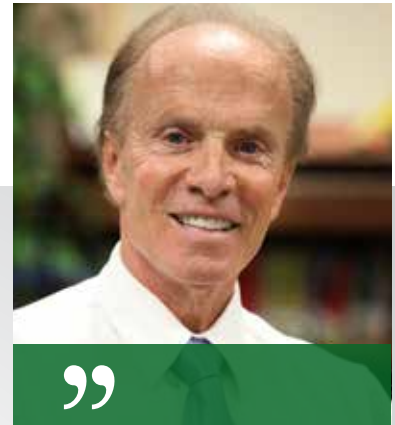
"**Math 20/20** training changed teaching from a focus on algorithms to a focus on understanding. Just this week, I watched a teacher teach division with decimal divisors and dividends. Students were using manipulatives and drawing pictures, and really understanding why the quotient ended up being larger than both the dividend and the divisor! This is a huge change from only teaching students to multiply the divisor and dividend by a power of ten to clear the decimals."



Jennifer Gray

Principal, Liberty Elementary
Liberty Elementary District

"I thoroughly enjoyed having reserved, specific time with a math expert to walk-through classrooms. I was especially thankful that I have a staff who are eager for the feedback and who are always looking for ways to evolve using the Task-Based Learning rubric. The rubric is a nice tool that helps us take the subjectivity and opinion out of the walk-through experience."



Chuck Starkey

Principal, Whittier Elementary
Mesa Public Schools

"The instruction my teachers received from the **Math 20/20** team has taught them how to provide more opportunities for their students to engage in higher-level thinking and discussion of math content. It is exciting to see students persevering through difficult math problems and defending their answers as they explain their reasoning to one another using the proper math terminology."



Getting started - sample timeline

January-February	<ul style="list-style-type: none">• Attend information meetings
March	<ul style="list-style-type: none">• Determine grade level(s) for Math 20/20• Identify session times and locations• Make decisions on ordering materials• Finalize Scopes of Work
May	<ul style="list-style-type: none">• Schedule SY2015 professional learning• Submit preliminary lists of participating teachers, teacher leaders, and principals
July	<ul style="list-style-type: none">• Make financial arrangements• Order materials• Participate in administrator planning meeting
August-April	<ul style="list-style-type: none">• Participate in six teacher sessions and four leadership sessions• Monitor and support teacher implementation of new learning
May-June	<ul style="list-style-type: none">• Submit teacher and student assessment data

Roles and expectations

One of the keys to Math 20/20 success is everyone involved has clearly defined roles, commitments, and responsibilities.



SUPERINTENDENT

Establish a mathematics vision that meets the needs of all students in the district by providing ongoing development and learning. Set the tone by modeling enthusiasm for mathematics and communicating the math vision to all stakeholders. Build in accountability to the implementation for Math 20/20 as part of the district expectations.



DISTRICT LEADERS

Create a process for focused implementation of Math 20/20. Schedule planning, teacher and leader sessions. Arrange for purchase and delivery of Math 20/20 materials. Collaborate with Math 20/20 facilitator to integrate district resources, evaluations, and initiatives into professional learning. Attend all leadership sessions and teacher sessions to support connections for participants.



SCHOOL LEADERS

Set the tone by modeling enthusiasm for mathematics, participating in mathematics discussions alongside the grade-level teams, encouraging staff to use new strategies learned in Math 20/20. Participate in all Math 20/20 leadership sessions. Provide support to teachers in the implementation of new learning by providing ongoing feedback and time to collaborate with one another.



TEACHERS

Participate in Math 20/20 teacher sessions, apply new learning in classroom instruction, complete professional readings, reflect on practices, and collaborate with cohort colleagues. Demonstrate reflective behaviors in relation to the implementation of newly acquired content knowledge, pedagogy, and student expectations.

Costs

Math 20/20 is designed to support simultaneous professional learning systematically across a grade level within a Local Education Agency (LEA). Grade level professional learning courses and follow-up support are provided at a site within the LEA. The cost analysis below includes the investment associated with **Math 20/20** for the 2015-2016 school year.

Grade Level Courses

\$8,000 per cohort

(Single grade level, 20-30 teachers per cohort)

- Deliver 36 hours of instruction to teachers
- Support teachers in their between-session work
- Collaborate with district leaders to customize implementation
- Deliver eight hours of instruction to leaders
- Support teacher leader as a trainer-of-trainer

Teacher materials — \$200 per teacher

- Binder materials
- Van de Walle book
- SMP posters
- Classroom manipulatives and non-consumables

Rodel school licensing — \$250 per school

Implementation Coaching

\$4,000 for the first school PLUS

\$2,000 for each additional school

- Two 2-hour sessions of teacher instruction
- Collaborate with district leaders to customize sustainability plan
- Three 90-minute leader instruction sessions
- Two half-day walk-through instructional audits and principal coaching sessions
- Two half-day coaching sessions with individual teachers and end-of-day summary feedback

Rodel school licensing — \$250 per school

Optional consulting services

- Customized to district needs at **\$900 per day**
- Ask for list of options from our representative

Who we are

Mission: Develop a non-negotiable commitment to quality math teaching and learning among teachers and their leaders.



The **Rodel Foundation of Arizona** is committed to improving the state's education system so that it is recognized as one of the best in the country by 2020 through partnerships and the development of unique and innovative initiatives.

Math 20/20 is a proven initiative for teaching mathematics to Arizona's students. It engages teachers and school leaders by taking a systemic approach to ensuring all Arizona students possess a deep and broad understanding of the mathematics needed for college and careers. The unique combination of intensive professional learning for teachers, teacher leaders, and administrators, accompanied by ongoing support, instructional resources, and student materials, develops a non-negotiable commitment to quality math teaching and learning throughout the system's culture. In partnership with education service agencies, **Math 20/20** seeks to transform the quality of math education throughout Arizona.

Rodel's leaders believe that collaboration with individuals and organizations is critical to improving Arizona's education system. The Rodel Foundation of Arizona brings together a broad network of key leaders in education, philanthropy, business and government to move Arizona's schools from pockets of excellence to systemic excellence.



MCESA
Maricopa County Education Service Agency

Maricopa County Education Service Agency (MCESA), under the direction of the Maricopa County Superintendent of Schools, is dedicated to ensuring that all school-age children in the county graduate college- and career-ready. MCESA builds alliance partnerships that provide leadership, services, and programs in the areas of Educational Innovation, Economic Management, and Executive Leadership.

MCESA is working to improve Maricopa County students' math education by encouraging districts to implement **Math 20/20** professional learning to achieve a school or district math vision.

MCESA offers comprehensive coaching services to schools, modeling quality standards-based instruction, observing instruction with principals and coaches using walk-through protocols, and using instructional inventories to gather holistic data on math practice and guide the planning of future professional development. MCESA is also facilitating the development of formative assessments and provides training on the use of formative assessment to differentiate instruction.

Overall, MCESA's vision is to empower a district's teachers with the understanding, strategies, and confidence they need to lead successful classrooms.

Start growing today



For more information about implementing
Math 20/20 in Maricopa County, please contact
Candace Diehl, MCESA's
Administrator for Standards and Assessment
at (602) 506-2931



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